



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/551,191	09/29/2005	Barry Raymond Hill	021500-140	3920
21839 7590 02/06/2009 BUCHANAN, INGERSOLL & ROONEY PC POST OFFICE BOX 1404 ALEXANDRIA, VA 22313-1404				
EXAMINER AKANBI, ISIAKA O				
ART UNIT 2886		PAPER NUMBER		
NOTIFICATION DATE 02/06/2009		DELIVERY MODE ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

Office Action Summary

Application No.

10/551,191

Applicant(s)

HILL ET AL.

Examiner

ISIAKA O. AKANBI

Art Unit

2886

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 and 19-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 and 19-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB08)
- Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 29 January 2009 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-4, 9-17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guering et al. (5,694,479) in view of Gahagan et al. (2004/0174519 A1).

Regarding to claims 1, 4, 9 and 19, Guering teaches a method of forming a shadowgraph image of a glazing comprising illuminating the glazing (**Fig. 1: 3**) with a light source (**Fig. 1: 1**) to form a shadowgraph image (**Fig. 1: 5**) of the glazing on a plane, focusing a camera CCD (**fig. 1: 6**) onto the image plane to measured/sample the illumination or light intensity by localized light source (**col. 1, lines 39-42**)(**col. 4, lines 2-3**), storing and analyzing the image using a computer that includes a memory (**see abstract**)(**col. 1, lines 44-45**)(**col. 3, lines 62-65**).

Guering is silent regarding to forming a shadowgraph image of the glazing on a virtual image plane, the virtual image plane being located between the light source and a camera, and on other than a screen.

Gahagan from the same field of endeavor teaches of measuring a shadowgraph image of glazing/substrate formed on a virtual image plane (**figs. 1 and 3**)(**pars. 0020, 0021**)(**page 5, right col., lines 20-21**).

Therefore, it would have been at least obvious to one having ordinary skill in the art at the time of invention to modify Guering by measuring a shadowgraph image of

glazing/substrate on a virtual image plane instead of measuring on the screen for economic reason. Additionally, it would have been at least obvious to one having ordinary skill in the art at the time of invention to modify Guering by measuring a shadowgraph image of glazing/substrate on a virtual image plane instead of measuring on the screen for the purpose of detecting the differences in contrast.

Further, it would have been at least obvious to one having ordinary skill in the art at the time of the invention was made to form at any desired position (i.e. front/behind of the glazing/substrate) a shadowgraph image of the glazing on a virtual image plane for the purpose of providing a more accurate measurement. Additionally, since Guering does not limit the position where the virtual image plane is formed (i.e. front/behind of the object), it would have been at least obvious to one having ordinary skill in the art at the time of the invention was made to form at any desired position (i.e. front/behind of the object) the virtual image plane of shadowgraph image for the purpose of providing a more accurate measurement.

As to claims 2-3, Guering when modified by Gahagan, Guering also discloses illuminating the glazing/substrate (**fig. 1: 3**) with a light beam/source (i.e. collimated light beam) from a localised light source to create a shadowgraph image on the virtual image plane and the virtual image plane is positioned behind the glazing so that the glazing is positioned between the light source and the virtual image plane (**fig. 1**)(**col. 2, line 23-35**).

As to claim 10, Guering discloses a method of determining the optical quality of a glazing (**figs. 1-3**), which include at least one area having a reduced light transmission comprising:

producing a shadowgraph image of the glazing (**Fig. 1: 3**); measuring (**fig. 1: 6**) the illumination of the glazing at a plurality of measurement points arranged in an array extending over the glazing; determining any deviation (**i.e. defects**) in illumination at those points from a desired value at each point (**col. 2, line 23-35**), wherein the at least one area of reduced light transmission (**zone where the limit for optical value is different**) is omitted (**i.e. prohibited**)(**zone considered not to be measured**) from the array of measurement points (**col. 2, line 36-41**)(**col. 4, lines 28-36**).

As to claims 11, 12 and 13, Guering discloses a method to determine the optical quality of a glazing comprising:

illuminating the glazing (**fig. 1: 3**) with a localized light source (**fig. 1: 2**) to produce a shadowgraph image (**fig. 1: 5**), recording (**fig. 1: 4**) the shadowgraph image, determining (**fig. 1: 6**) valid measurement points of the shadowgraph image which excludes those points which correspond to obscured areas of the glazing, processing the recorded shadowgraph image to determine an illumination value for each valid measurement point (**col. 2, line 24-41**), constructing a reference image by scanning a convolution window point by point over the processed image and using a convolution filter to calculate a reference illumination value at points of the reference image which correspond to each point of the processed image by averaging the illumination values of the valid measurement points of the processed image covered by the convolution

window and comparing the illumination value of each valid measurement point of the processed shadowgraph image with corresponding points of the reference image to determine the optical quality of the glazing (**fig. 1**)(**col. 2, line 54-64**)(**col. 3, line 13-col. 4, line 16**) and wherein the convolution window is of constant area during the scanning operation (**see abstract**)(**col. 4, line 50-52**).

As to claim 14, Guering also discloses the limitation wherein a valid measurement point is one in which the illumination value at that point is equal to or above a pre-set threshold (**i.e. weighted average**)(**col. 2, line 24-36**).

As to claims 15 and 16, Guering further discloses the limitation wherein when the point of the convolution window for which the reference illumination is being calculated corresponds with a non-valid measurement point of the processed image, a reference illumination is not calculated and wherein non-valid measurement points are not taken into account in the construction on the reference image (**col. 2, line 54-58**)(**col. 4, line 17-42**).

As to claim 17, Guering also discloses using the same light source (**fig. 1: 2**) for the production of the shadowgraph image (**fig. 1: 5**) and in relation to calculating the reference image (**fig. 1**).

Claims 5-8, 20 and 21 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Guering et al. (5,694,479) in view of Gahagan et al. (2004/0174519 A1), and further in view of Park (2002/0135831 A1)

As to claims 5-8, 20 and 21, Guering when modified by Gahagan, Gahagan discloses light source that is collimated by a lens optical system (**figs. 1 and 3: 20, 36a and 36b**).

Guering when modified by Gahagan fail to specify that the light source is (i.e. LED/laser/ambient source) which is collimated by a mirror optical system and a wedge prism that is used to tilt the virtual image plane positioned between the camera and the virtual image plane located between the light source and a camera.

However, since Guering does not limit the light source to be used and the position where the virtual image plane is formed (i.e. front/behind of the object), it would have been at least obvious to one of ordinary skill in the art at the time of the invention was made to use any suitable light source (i.e. LED/laser source) and form at any desired position (i.e. front/behind of the object) the virtual image plane of shadowgraph image for the purpose of evaluating the optical quality of a glass accurately. Additionally, it would have been at least obvious to one of ordinary skill in the art at the time of the invention was made to use any suitable light source (i.e. LED/laser/ambient source), since the method as disclosed by Guering works just as well with any light source.

Further, it would have been at least obvious to one of ordinary skill in the art at the time of the invention was made to use a mirror optical system and a wedge prism to tilt the virtual image plane, since as evidenced by Park, it is a conventionally known optical system layout of a laser collimator. **See (figs. 4A-B: 12, 14, 46, 48)(par. 0010).**

Therefore, it would have been at least obvious to one having ordinary skill in the art at the time of the invention was made to use a mirror optical system and a wedge prism to tilt the virtual image plane for the purpose of providing a more accurate measurement.

Response to Arguments

In response to Applicant's arguments/remarks, see pages 7-10 filed on 15 December 2008, with respect to the rejection(s) of 1-17 and 19-21 have been fully considered and are persuasive. However, upon further consideration, a new ground(s) of rejection is made in view of claim amendment.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Isiaka Akanbi whose telephone number is (571) 272-8658. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tarifur R. Chowdhury can be reached on (571) 272-2287. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Isiaka Akanbi

February 02, 2009

/TARIFUR R CHOWDHURY/

Supervisory Patent Examiner, Art Unit 2886